

(19) Federal Republic
of Germany



German
Patent and
Trademark Office

(12) **Unexamined
Patent Application**

(10) **DE 31 05 922 A1**

(51) Int. Cl.⁷:
F 24 H 9/20

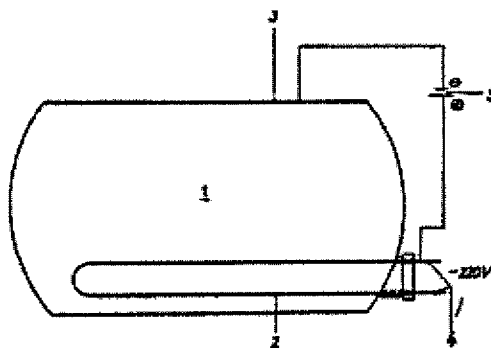
(21) File No.: P 31 05 922.8
(22) Filing Date: 18 February 1981
(43) Disclosure Date: 9 September 1982

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(54) **Water Heater with an Electric Heating Insert Connected to Alternating Current**

Undesired lime deposits on the electric heating insert (2) are to be avoided. For this purpose, it is made of a material that can be anodically passivated and additionally connected to a DC power source (5). The electric heating insert (2) acts in the form of an anode, on which no lime is deposited.



Claims

1. Water heater with an electric heating insert connected to alternating current,

characterized by the fact that the electric heating insert (2) consists of a material that can be anodically passivated and is incorporated electrically insulated in tank wall (3),

and that it is additionally connected anodically to a DC power source (5).
2. Water heater according to Claim 1, characterized by the fact that the DC power source (5) is connected with its plus pole to the electric heating insert (2) and with its minus pole to the tank wall (3).
3. Water heater according to Claim 1, characterized by the fact that the electric heating insert is coated with a platinum layer.

Water Heater with an Electric Heating Insert Connected to Alternating Current

Water heaters, namely, hot water accumulators, flow-through heaters or hot water preparers with electric heating inserts, represent a long known state of the art.

A known problem is that, over time, lime is deposited on the electric heating inserts, which hampers heat passage and general functional capability.

The electric heating inserts are to be protected against lime deposits.

This occurs according to the invention by the features mentioned in the characterizing part of Claim 1.

In the field of cathodic corrosion protection of water heaters with an outside current anode made of platinum-titanium, it is known that the electrode connected as anode remains fully free of deposits, whereas lime is deposited on the cathode tank wall. This finding was deliberately transferred to the electric heating unit, which has an entirely different task than the outside current anode. For this purpose, it was necessary to make the electric heating insert from a material that can be passivated anodically, like titanium, since heating rods made of the thus far common metals would be destroyed in a short time. Tantalum or niobium are also considered for this purpose as a material that can be anodically passivated. Moreover, an additional connection of the heating insert to a DC power source had to occur.

A special application is achieved, if the electric heating insert is coated with an additional platinum layer. Platinum coating simultaneously gives the heating insert the function of an inert anode for cathodic corrosion protection of the tank.

The accompanying drawing shows, in a single figure, a longitudinal section through a water heater as a practical example of the invention.

An electric heating insert 2 is situated in the interior 1 of the water heater in the form of a heating rod in the shape of a hairpin. This is electrically insulated in known fashion in tank wall 3 and connected with its outer ends 4 to a power supply main with AC voltage. The electrical heating insert 2 preferably consist of titanium and is optionally provided with an additional platinum coating.

A DC power source 5 is connected with its plus pole to the electric heating insert 2 and with its minus pole to the tank wall 3. Because of this connection, the heating insert acts as anode, so that it is protected from lime deposits.

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